SITREP for January 1958

Little America Station

IGY NR 8 Sit Rep Nr. 12 - Aurora: Both the patrol spectrographs have been repaired and are now operating on a fully automatic test run. The all sky camera was rewired to accommodate the frequency standard control. The scanning spectrometer arrived at Little America with its optics intact and the electronics are now undergoing modifications. The interior of the Aurora tower has also be renovated. This includes the remounting of the all sky camera to give a complete unobscured horizon. The dome was removed to enable complete outdoors operation of the camera thus improving quality of the photographic records by illiminating the frost, transparency and reflection problems. A fifty watt heater was installed for the plain mirror as recommended by Scott Base where camera was operated with success outdoors all winter. The camera and the patrol spectrograph have been aligned along the geomagnetic meridian. The spectrograph dome has been replaced by a single two foot dome to reduce area needed to be kept frost clear. The visual observation dome was removed for out doors observations through a trap door in aurora tower roof. Windows were installed in the side of the tower for scanning spectrometer observations. A new sky shutter solenoid was sent to Dawson at the Pole Station from the spares at this station. Geomagnetism: Leaks in the variometer building resulted in water getting into piers. However, the situation was rectified before water froze. Some warping has been noted by a change in the standard Z base line intensity, necessitating level adjustment. Irregular drive motion in rapid run drum assembly made it necessary to change the final 45 Deg bevel drive gear. A slight loss in recording time resulted. Generally undisturbed conditions for the month enabled satisfactory absolute measurements to be taken this month. Field stations were established at Little America III and at Mile 200 on the Byrd Station Trail (79 Deg 26 Min S,150 Deg 27 Min W), with plans for additional station at Mile 300 expected to be completed by the end of the month. Preliminary calculations produce a value of 13100 gammas for the horizontal intensity at Mile 200. In view of the differences between this and the anticipated value as per the Hydrographic Office Publication 1701 S, 1954, it is hoped that a field station can be established at Mile 100 next season. Ionosphere: There was 86% data coverage for the month. Approximately 3% of this loss was due the equipment being out of operation for installation of several new circuit modification as prescribed by CRPL Boulder. Remainder of loss due to equipment malfunction and operator error. The C-4 recorder is currently operating satisfactorily. Meteorology: During January the infrared Carbon dioxide analyser was thoroughly overhauled and placed in normal operation. The surface ozone analyzer was also put back into normal operation after an overhaul. A new power line has been strung to the thermoscreen aspirator. An unusual halo display occurred from 0900 to 1300Z on January 13 with two concentric rings, sun pillar, two parhelia and one tangent arc. The highest rawinsonde run occurred at 0000Z on January 12 reaching a height of 14,153 meters or 112,050 feet with a recorded pressure of eight millabars and temperature of -21 Deg C. Weather Central: Weekly conferences of the entire weather central group have been held. Discussions are concerned with topography af the southern ocean stations, analysis practices of Australia and the Union of South Africa, climatology of subAntarctic stations, frontal analysis and other proceedures. A survey has been made of the data supply and action has been started to improve lagging areas. Whaling collectives from Australia and the Union of South Africa are being intercepted by Communications with increasing regularity. The requested data from Petoria is

being received. Van Loon is preparing a paper on sub Antarctic Stations for the New Zealand Symposium. Glaciology and Seismology: Ross Ice Shelf Traverse Party; The Traverse continues Southeast to Liv Station and thence North on 168 Deg Longitude to 80 Deg 11 Min South 168 Deg 15 Min West. Twelve seismic stations, 56 gravity stations, 47 magnetic stations, 12 met studies, 35 Rammsonde, 91 Weather Observations, Temperature indentity in 11 ten meter holes, and the same in one twenty meter hole were completed. DenHartog relieved Cromie. The last major resupply was made January 29. The estimated date of arrival at Little America for the Traverse Party is February 16. Glacial Meteorological Program; Upon return from the Pole Station, Hoinkes continued all radiation recording without interruption. On January 12 he visited the Ross Ice Shelf Traverse Party on a resupply and reconnaissance flight at 83 Deg 30 Min South 165 Deg West. Albedo measurements were taken. On January 20 - 21, on a Byrd Station Traverse resupply flight Hoinkes completed albedo measurements at Byrd Station and studied the cores from the Deep Drilling program . 20 series of albedo measurements have been completed this month at Little America. After visit to Little America III for comparison measurements in old Glaciological pit project will be finished about January 31. Airborne Traverse; Three stations on the Victoria Land Plateau show an approximate 17 cm water accumulation avergae since 1951 . Two gallons tritium samples collected from surface level and 35, 90, 150 225, 550, 950 cm levels. Density and temperature profiles were taken to ten meters. Minimum temperature recorded was -45 Deg C. at station located at 139 Deg 48 Min East 77 Deg 22 Min South at an altitude of 8850 feet. Quantitative data taken on sastrugi, deposition erosion rates, orientation , wind velocity correlations. At the furthest station standard weather observations were taken three times daily including six days balloon tracking by theddolite. The glaier slope was measured. Plateau observations were terminated on January 22. One skua gull was sighted at furthest point. Glaciology at Little America; Work was resumed on January 24. Pit observations were made at a 7.3 meter pit at Little America III. The 1939 layer was identified by debris. The average annual accumulation is 40 cm. of snow. A Tritium sample was taken to cross check with samples taken on Victoria Land Plateau. Sample was also taken from less positively identified 1947 layer for tritium half life determinations. An experiment to differentiate summer and winter snow by NaCl concentration deflecting ratio of maritime air mass presence showed inconsistent curves in two pits. Conclude method offers little promise. General: Personnel at or attached to this station include 17 DF III IGY, one DF II, 5 Traverse, 2 seasonal. All IGY cargo has been received with exception General Supply, box number 33. All cargo has been cached. All Byrd Station cargo has been received and loaded aboard Tractor Swing which will depart this station January 20.

Byrd Station

Byrd Nr. 97 - Aurora: The access shaft to the tower has been rebuilt from old panels and covered with canvas. Shelves have been constructed in shaft for spares and equipment. A dumb waiter has been installed for the moving of the equipment. The old K-100 camera has been rebuilt and is in operating condition except for pull down mecahnism which awaits the replacement of ball bearings. Plans have been made for new mounts for the all sky camera and patrol spectrograph. Deep Drill Rig & Ice Core Program: The Drill Rig reached a depth of 1013 feet on January 26 with 99% recovery of all cores. The core length at 500 to 600 feet was 7 to 10 feet in length while at 1000 feet 2 to 5 feet in length. Stratigraphic strip photos have been taken to 300 feet and a detailed density profile of 130 feet. Density recorded was 0.700 to 0.724. The annual

accumulation is approximately 20 cm water equivalent. Crystal size at 1013 feet has ground mass 2 to 6 mm. Scattered irregular crystals 1 to 3 cm are largest diameter recorded. The temperature was taken at 50 foot intervals to 1013 feet with a sample in degrees centigrade as follows: -28.30 at 300 ft;-28.30 at-400 ft; -28.44 at 500 ft;-38.46 at 600 ft;-28.50 at 700 ft;-28.53 at 800 ft; -28.62 at 1000 ft. The hole is secured with a six inch casing extending 20 feet above the surface closed with a screw cap. Access rungs have been welded to extension and a sheave block mounted at the top for future seismic velocity and deformation measurements. Geomagnetism: There were 26 days of disturbed conditions during the month with some quieting towards the end. The time mark system has been revamped and ran well during a large portion of the month. The AC motor in the program machine was replaced on January 7, and the relay in the control panel on January 9. Although there were numberous power failures during the month the battery system carried the equipment nicely. On January 30 the main power cable was cut by a D-8 cat but was back in operation a few hours later. Two and half hours of rapid run records and 8 hours of the vertical intensity trace on the standard were lost. Glaciology: Accumulation for the month was nil. The thermohms have been relocated 420 meters northeast of the station in the southest corner of the glaciological area. These thermohms are now located at the following depths. (In meters): 0.5, 1.0, 2.0, 4.0, 8.0, 16.0. A one kilometer grid of 100 accumulation stakes was laid out 15.0 meters northeast of the station, 10 rows of 10 stakes each 100 meters apart. Ionosphere: The ionospheric lab was enlarged to allow greater accessibility to the ionosonde. Equipment has been operating favorably with only one hour's loss of records for the month. Diurnal variations are slight but are becoming more apparent in increased F-2 factors, E layer height and L condition in F region. The median F-2 ordinary frequnecy values are relatively constant being approximately .23 mcs higher than in December. Highest full weight value 8.8 mcs on January 9 at 1200 local time. There was an disturbed ionospheric condition over this location on the following dates: January 1, 17, 18. It was midly disturbed on January 15, 21, 22, but on no days was it severaly disturbed. There were many brief periods of complete absorbtion during the 14-15 January and 18-25 January. These coincide favorably with solar flares and SWI. Radio reception has been variable. Meteorology: The flush valve of the hydrogen generator has been completely clogged with sodium aluminate residue and Darling and Peters suffered second degree burns in attempting to clean it. The average temperature for the month was -10.4 Deg C., with a maximum of -4.6 Deg C. and a minimum of -23.9 Deg C. The average height of 59 rawinsonde flights was 24,674 meters. Radio noise: The Radial and plane antennas were installed on the snow surface. Also a handmade calibrated stub antenna was constructed. Building 13 was wired for the radio noise equipment, and the power was connected January 25. A 600 watt electrical radiant heater has been installed. The equipment was test operated on January 31. Whistlers: All the fragile equipment arrived by air in good condition. The remainder arrived on the tractor train January 31. The VLF Whistler equipment is to be located in Building 13, with the antenna tower 300 feet to the west. It is expected that the equipment will be operative by the end of February. Station Seismology: Much better quality of records has been received since the seismometers were secured to steel base plates. 59 quakes were reported with some very well received phases. RF feedbacks and HV equipment interferrence still is a major problem. Installation of RF filters is proceeding. With D-8 tractor operation probably at minimum during winter months, records should improve. Traverse Operation: During January the party travelled 348 miles (nautical) from Mile 429 at 77 Deg 27.6 Min South 100 Deg 26 Min. West in an easterly direction towards the Sentinel Mountains. Then the party travelled in a Southerly

direction to a solitary Nuatak at 79-36.9 South 91-11 West. The Party then proceeded to the Southwest towards a peak at about 80-29 Deg South 96-15 Deg West. The traverse party ended the month at 80-16 Deg South 95-20 Deg West at Mile 768. Along this route the following observations were made: 13 Short Refraction profiles; 110 gravity and magnetic readings. Six days were spent at the Sentinel Mountains doing long seismic refraction shots and collecting rock samplas. It was determind that the ice 100 to 200 miles West of the Sentinel Mountains is about 3000 meters thick, the maximum being 3540 meterw. Reflections were received extending to the Sentinels. Increasing interference from surface noise was found on the approach to the mountains. Thirteen Glaciological Deep pit studies were made along this route as well as 55 intermediate Rammsonde measurements. The year's accumulation alomg the traverse route, leg two, is between 50 to 80 cm. At the Sentinels it was noted from indications on the Nunataks that the former ice level had been 800 feet above the present surface. The indications of this were photographed and measured. Five Nunataks were in all visited and collections made from each. Four resupply flights were received during the month. On one flight Marshall (SIPRE) visited traverse party to have conference with Anderson on the pit studies and with Bentley on the late season seismic program at Byrd Station which will utilise the Deep Core hole. Hildebrand and Siri visited the party on another flight to make physiological observations. On this same flight a partial reconnaissance of the 1958-59 Travere Route was made.

South Pole Station

IGY Nr. 165 February 4, 1958 - The following seismic information about the area in the vicinity of the station has been supplied by the Commonwealth Trans-Antarctic Expedition. (Read the following as indicated: Distance in miles from the station towards Shackleton, Longitude, Date of shot, Altitude of snow surface in feet, depth of ice.)

85 Miles	31 Deg W	Jan. 16	8,000 '	7990 - 8000 '
55 Miles	33 Deg W	Jan. 17	8,600 '	5980 - 6000 '
25 Miles	35 Deg W	Jan. 19	9,250 '	5300 - 5310 '
0 Miles	-	Jan. 25	9,1800'	3560 - 3560 '
				3200 - 3230 '

General: On January 4 Sir Edmund Hillary and party of four men arrived at the station. On January 5 Giovinetto (Glaciology) reported at the station and relieved Remmington. On the same flight were Captain E. Maher (ComAntarctic Suppacty) and V. Rastorguev (Soviet Weather Central Observer), the latter on a turn around flight from McMurdo. On this same date Sir Edmund commenced his return trip to Scott Base. On January 6 Squadron Leader Lewis passed over the station on his flight from South Ice to Scott Base. On January 11 Captain Maher departed for McMurdo. On January 18 Admiral Dufek and staff arrived in preparation for reception of Dr. Fuchs (CTAE) expedition which arrived on January 20. On January 21 Admiral Dufek and staff departed followed by Dr. Fuchs on the 24th. The tunnel to the Met. buildings has been completed. Aurora: No report. Glaciology: Fifty-five dowells were placed over a 1,500 square meter area to measure net accumulation. The accumulation for the second half of the month was 0.75 cm. The thermohms are located at the following depths: (in meters) 1.5, 2.0, 2.5, 3.0, 5.0, 12.0. The thermohms to 5 meters are currently recording the general warming effect of summer while the 12 meter thermohm is still cooling. Consequtive study on five pits is now underway. Seismology: 142 disturbances were reported for the month. New steel base plates for the seismometers have been laid. Geomagnetism: The variograph has been operating normally throughout the month.

Ionosphere: Operation has been normal for the month. The C-3 has been modified s[illegible] to [illegible] seconds at one minute past each hour and to make automatic zero pulse checks on every ionogram. A height marker calibration has been made and the error reduced to less than one half of one percent. New short persistance cathode ray tube was installed which improved quality of the ionograms, but the pulse repetition frequency had to be increased from 30 to 60 to maintain the desired ionogram density. Monthly median values of the FOF-2 continue to exhibit the SAG diurnal variation observed in previous months. During the third week in January the separation between F1 and F2 layers began to be less definite. By the end of the month they had almost merged. Meteorology: The average monthly temperature was -24.0 Deg. C., the lowest -31.1 Deg. C., the highest -24.7 Deg. C. The average height of 59 rawinsonde flights was 23,079. The highest flight was 33,684 meters recording 8 MB pressure. Thermohms were installed at one and two and one half meters below the snow surface. The sunshine switch was exposed and was recording January 26. During 26 days of the month precipitation was recorded mostly in the form of ice crystals. There has been considerable difficulty with soft rime on the pyrheliometers, although none has collected on the radiometers. In the upper air program temperature observations at 32 kilometers were -25.5 and -24.0 Degs. C., on the 196 Rawinsonde. Time cross sections fo 5 to 15 day mean temperatures from the surface to 100 MB show a complete reversal from December. From the surface to the tropopause temperature rose steadily until the period January 16-20, when maximum was reached and temperatures fell off sharply for the reminder of the month. Temperatures above the tropopause decreased steadily until January 16-20 and then increased slightly. The tropopause rose from 8 to 10.5 km on January 16-20 but fell sharply to 8 km again by the end of the month. A broad look at 15 minimum temperatures for the months of November, December, January show two well developed maximums in the tropopause, the first late in November and the second late in January. A minimum appeared near the solstice. Temperature changes above the tropopause compared with those in the troposphere were consistenly ppposite in sign and nearly equal in magnitude. Micrometeorology: 88 Wind profiles were run during the month. Good wind speed distribution was obtained from 1.8 meters per second to 16.3 meters persecond. Extensive attempts have been made to improve the sensitivity of the Leeds and Northrup recorder used to measure temperature. It is considered to insensitive to obtain accurate thermocouple readings. Brilliant haloes observered with several unusual components noted including circumsenitsal arcs, 120 degree purantselions, parheltic circles and Parry's arc.

Hallett Station

IGY NR 67 SitRep 14. for January - Ionosphere: No equipment failure during the month. Official modifications being effected with minimum disturbance to the operation. Geomagnetism: The equipment is in routine operation. The temperature stabilization inside the building and improved methods for shortening the time required to take absolute observations to minimize the effect of disturbances are being investigated. Seismology: The vertical long period seismometer appears to be extremely temperature sensitive. An attempt is being made with additonal heaters and thermostat to maintain constant temperature. Meteorology: The average height of 59 rawinsondes was 22,278 meters. The average monthly temperature was 0.8 Deg. C. All equipment has been accounted for with the exception of the radiometer check box. Both the Esterline Angus recorders have been mounted plus all Speedomax. The solar radiation program is almost ready to operate. The meteorology tower remians to be errected. General: The relieving personnel took over January 16. The IGY resupply is all under cover.

Wilkes Station

IGY NR 231, Wilkes Station January SitRep - Ionosphere: Modifications to the C-4 are underway and the new film development process is being used satisfactoily. Cosmic Rays: Electronic equipment modifications are underway, and the equipment is temporarily inoperative. Seismology: Sixteen earthquakes have been recorded. The galvanometer period adjustment has been made; The sensitity has been reduced because of a noise increase. The snow about the instrument shelter has melted resulting in increased temperature drift. The snow is being replaced by gravel. Microseismic activity is low; Geomagnetism:There was generally little activity towards the end of January. The temperature diurnal is now about three degrees C. Several time marks are being lost each day. The frequency changes of the generators are causing a shift of the time marks on the Rapid Run records. Glaciology: Thirty-two gravity stations were established. By means of the Atka's helocopter flights were made to Haupt Nunatak at Point Frazir Islets with glaciological team and Dr; Llano; Mitchell Island visited by boat by same team. Aerial photographs were taken of the Windmill Islands . A trip was made by weasel to Site 2 on the ice cap. The necessary survey needed for the gravity determinations was begun along this route. Meteorology: The average monthly temperature was 0 Deg. C., with a maximum of 8 Deg. C and a minimum of -7 Deg C. The average height of the rawinsonde flights was 26,992 meters with the highest flight being 31,288 meters. General: Both the large and medium sized Sno-cats are operating well on the Shelf Ice ramp. Support personnel are busy arranging new supplies and equipment and getting them under cover. A new tunnel was constructed between the barracks and scientific and recreation buildings.

Ellsworth Station

IGY Interim Sit Rep February 28, 1958 - General: The transfer and training of relieving personnel is underway. Traverse personnel have not had an opportunity to join relieved personnel in the field. Meteorology: During transfer period six runs were missed due to the condition of the GMD-1A equipment which is now operating normally. The remainder of the program is operating normally. Ionosphere: Work of modifying the C-4 recorder is almost completed but some records were lost as a result. However, the records for the World Days were obtained. Antenna modifications have not begun. Whistler equipment is operating normally. Traverse: An attempt will be amde to continue the traverse towards Gould Bay next week. All scientific equipment was left in vehicles when relieved personnel were evacuated.

IGY News

IGY News Msgs Nr 5 - It has been announced that Dr. P. Siple has been awarded the Distinguished Civilian Award for his services in the Antarctic by the Department of the Army. Arctic Notes: Drifting Station A's movement traced an irregular pattern during much of December crossing previous path five times. This movement was restricted to a limited area between 161 Deg. West and 166 Deg. West. The greatest Ocean depth measured was 3,076 meters, shallowest 2260 meters. The low temperature for December was - 56,9 Deg. On December 20 a Polar bear damaged some runway lights; the bear was not seen but both its tracks and that of the fox have been located. Drifting Station B moved from 80-20 Deg North 112-51 West on December 1 to 80-19 North 113-02 West on January 2 The ocean depths measured during December varied from 904 meters to 890 meters. The low temperature for the month was - 61 Deg F. Numerous Fox tracks have been seen two miles from camp. Satellite: It has been reported that a new phenomenon in

radio wave propogation has been observed with the transmissions from the Soviet Sateliite. It appears that the 40 mc sighal from the satellite were sometimes focused into small hot spots halfway around the world from the point from which the satellite was transmitting. nergy from this concentrated area was then radiated or scattered to receiving antennas so that the hot spot appeared in motion as a ghost satellite. It is hypotheised that the phenonmenon occurs when the ionosphere is exceptionally stable. On December 26 the Jordell Bank radio telescope reported that the first Soviet satellite disappeared from its orbit. US astronomers assume that the satellite feel to earth on or about January 3. The U.S. Army announced that the U.S. Satellite to be launched by Juptoer will be cylindrical with a total length of the assembly to be 80 inches with the actual satellite containingin 30 inches of the assembly. After the solid fuel of the rocket stage is burned the weight of the assembly will 29.7 lbs. The rocket casing will remained attached to the satellite while it is in its orbit. Rockets: Preliminary examination of the data gathered by the rocket launchings at Fort Churchill last summer which reached a height of 60 miles shows evidence of winds of 300 mph in stratosphere. Oceanography: The greatest ocean depth yet discovered was reported by the Soviet oceanographic ship in the Marianas Trench of the Padific. The depth recorded was 35,948 feet.

IGY News Msgs Nr. 6 January 22, 1958 - It is announced that the Antarctic meeting to be held in New Zealand is definitely scheduled for the 18th to 22nd of February in Wellington. A summary of the first six months of the US IGY pro gram was published on the 17th January in the Journal of the American Association for the Advancement of Science, called "Science". Much of the report was devoted to the Antarctic Program. Other portions of the report, however, included information on the Rocket program, new data on the upper atmosphere obtained from Rocket borne instruments. As of the 30th of November 81 IGY rockets had been fired including 9 aerobees, 5 nike-Coons, 13 Nike Deacons and 54 Rockoons. Rockets fired during polar blackouts measured electron distribution to 250 kilometers. The experiments confirmed the existance of the D region at low levels and that the source of ionization is xrays from solar flares. Mass spectrometer observations at Fort Churchill confirmed diffusive separation of atmospheric cases above 110 kilometers at that latitude. Firings at Fort Churchill also indicate that the First atmospheric temperature maximum occurrs at 60 kilometers as opposed to 50 kilometers at lower latitudes. Geomagnetism: Existence of an electron jet, an equatorial electrical current of several hundred thousand amperes high in the atmosphere, tentatively confirmed by observations from Koror in Western Pacific. Aurora: English scientists report that radar observations indicate that auroras occur simultaneously in the Northern and Southern hemispheres. U.S. Polar radio observations provide further evidence of this type. Ionosphere: Whistler studies indicate that earths atmosphere extends to a greater distance than previouls believed and that tenuous atmosphere, the sun's corona, may fill the space between the earth and the sun. Electron concentrations measured in the polar regions indicate that the concentrations are not dependent upon direct solar radiation but are closely allied with geomagnetic activity. Cosmic Rays: The location of the cosmic ray equator has been shown to deviate systematically from the geomagnetic equator indicating possible extraterrestial magnetic field which alters trajectories of cosmic rays at constant altitude. Latitude changes as small as 7 miles have been detected. Balloon and Rocket observations have identified soft radiation which is believed to result from auroral particles bombarding atmosphere. Oceanography: Neutral buoyancy floats which are tracked by sonar have disclosed the existence of swift currents counter to the Gulf Stream at depths of 9000 feet. Seismology: 100 second waves previously identified only in earths crust have been indentified now in the mantle. These provide a better resolution of structural details than the 400 second waves.

The primary purpose of this News Letter and others to follow is to provide information to all IGY personnel at Little America about the general scientific situation and progress at other Antarctic Stations. The main contents will be the periodic SITREPS (Situation Reports) of IGY activities from Little America, Byrd, South Pole, Hallett, Wilkes and Ellsworth stations. Other information received of these as well as of foreign Antarctic bases may be added later. Special details of the Little America Station operations, including preliminary results may also appear if time is available. Suggestions of additional topics of information would be welcomed. It is hoped that this News Letter will be ready for distribution about the 10th of each month hereafter.

Because of the press of logistics matters throughout the currently concluded season, News Letters 8 - 10 were not complied and it is the intention to supply these back issues as soon as possible. There are limited copies of Nos. 4 - 7 on file. Unfortunately Nos. 1-3 are out of print, although a complete reading file is available in the library in Building 18.

SITREPS FOR FEBRUARY 1958

Little America

No. 13, March 5, 1958 - Aurora: The all sky camera and patrol spectrograph were installed in the Aurora tower with both instruments operating during the twilight hours. A periscope was constructed in the tower so that the scanning spectrometer can be operated from within the tower viewing zenith and region of the sky up to 30 degrees above the horizon at any azimuth. Meteor Radar: A three element yagi antenna was constructed for the meteor radar equipment which gives a higher signal to noise ratio than the previous dipole. Interferance from the station's communications equipment limits use of this equipment to a few hours per day and the feasibility of installing the equipment at Kiel Field for the periods of desired observations is under consideration. During meteor showers of February 18 to 20 maximum counting rate of 122 meteors per hour were observed. Geomagnetism: Rapid run records were lost for one day due to the failure of the final drive gears. Standard magnetograph records of February 13 were lost due to operator error. Temperature coefficients and absolute value checks were made on instruments used on the Ross Ice Shelf Traverse. Azimuth to permanent stake redetermind and a clockwise change of two mirtues found. This new value was adopted February 1. Magnetic studies at field stations were computed as follows, Little america III, January 18 - 19, Declination 104 Deg 20 Min., Dip 80 Deg. 04 Min., Horizontal Intensity 11050 gammas; Mile 200 Byrd Station Trail, (79 Deg 20 Min South 150 Deg 19 Min West) January 23, Declination 95 Deg 24 Min., Dip 78 Deg. 11 Min., Horizontal Intensity 13130 gammas; Mile 380 Byrd Station Trail, (78 Deg 45 Min South, 137 Deg 49 Min West), January 30, Declination 81 Deg 45 Min., Dip 77 Deg 08 Min., Horizontal Intensity 13940 gammas. Glaciology: 3567 meter base line rechained showing 4.3 meter gain in 375 days. Average accumulation as indicated om 117 stakes in period from mid October to mid February is 21 cm.

All SIPRE ice cores and drill equipment received at Little America from Byrd Station. Ionosphere: C-4 Recorder in normal operation, 94% coverage obtained for the month with half the loss due to operator error. Winter or night conditions beginning to appear on ionograms. Meteorology: 55 Radiosonde flights made during February with an average height of 25826 meters. The highest flight was February 18 recording 6 MBRS or 35,136 meters. At the top of the run the temperature was minus 29.7 C. Infra red Hygrometer operative but original calibration incorrect. The recalibration of the instrument is underway. All other programs are operating normally. Seismology and Gravity: Seismic travel times obtained to 40 meters in Deep pit. Gravity meter showing shelf oscillations of 15 second period compared to 40 second s observed during periods when the Ross Sea was ice covered. Amplitude of oscillation decreases to one half going from 5 to 10 kms from the barrier's edge. Traverse Operation: Continued Northalong 168 long. to barrier then east around North end of Roosevelt Island arriving at Little America February 13. During this last phase the following observations were completed; seven Seismological and Glaciological pit studies, 15 Gravity and geomagnetic and Rammsonde observations. Weather Central: Except during blackout conditions the supply of data improved with less delays enroute. 80 - 90% available data received within 12 hours of observation time. Terminal and flight forecast responsibility taken over by Weather Central after termination USN Aerological Unit acitivity. Personnel shifts rotated to allow one day research and one day off per man week.

South Pole Station

IGY Nr. 238, March 3, 1958 Celestial Observations: Mean of 84 direct point inverted sun upper and lower limb observations completed 11 February. By temperature graphic plot station located 1450 feet from geographic pole on grid 307.4. Data transmitted to Coast and Geodetic Survey. Aurora: Smaller dome installed under visual dome and air space sealed afer packing with desicant. Double dome in place for 25 days with no apparent frosting at temperatures down to minus 57 Deg F. Double dome is impractical over all sky camera, as smaller dome is not large enough to accommodate instrument. A new mount for the all sky camera was built which supports the instrument from above allowing easier accessibility plus aligning camera along the geomagnetic meridian. Both the All Sky Camera and the patrol spectograph are ready for operation. Platform built under visual dome allowing meteor observations to be taken in reclining position. Seismology: 37 of the quakes reported in January have been confirmed. About 118 disturbances were reported in February. Vibration free mounting of the three component film recorder achieved on new pier with posts isolated from the scientific building and a single horizontal seismometer oriented along the zero meridian was set up and is operating satisfactorily. This instrument and the vertical seismometer already in operation consitute the full operating capacity of the station with the present stock of galvanometers. Ionosphere: Operation continues to be normal. Continuous records on 16mm film taken for two hours daily since February 17 to record sunset phenomena. Values of FOF were higher than past month with a maximum 10.0 mc AM 1600 UT February 16. Geomagnetism: Operation was normal. There were many disturbances recorded with a maximum at 0200 on February 11. Micrometecrology: 100 hourly wind profiles were run during the month on 24 separate days. Logarithmic wind profiles of

January replaced with many linear profiles of stable stratification during first half of period when clear sky, low winds, and steadily dropping temperatures characterized weather. Many hourly profiles revealed 3-4-5 times higher speeds at 8 meters than at 18 cms, 7 times for one 20 minute period. Lowest set of cups, formerly 25 cms, now 10 cms, conforming to logarithmic wind law during periods of neutral stability. Continuous temperature gradient measurements since 3 February at seven subsurface and ten above surface heights were taken. 14.5 Deg F. inversion from surface to 8 meters recorded on February 6 believed the strongest inversion of summer. Continous heat flow measurements since Febraury 16 have been made at the surface and at two subsurface depths. 19cms of snow fall and drift during the last half of the month required adjusting depths and heights of thermocouples. Glaciology: The month's snow accumulation was 7.5 cms. Eighth pit study was completed to six meters, second core study to 16 meters, rammsonde to nine meters. Thermohms junction box was connected to the weather bureau recorder, and six levels of snow temperature are recorded daily. The work in the snow mine is sheduled to start middle of March. Meteorology: Average monthly temperature minus 35.2. 45 Rawinsonde flights completed with average height 20124 meters. Highest flight 33,752 meters on February 26. In mid troposphere undulations typical of December and January continued with broad minimum of first half of Febraary and March DEB 16/10. In lower troposphere the SFC inversion that became isothermal during December and January is reestablished with 10 to 15 DEB gradient. Troposphere continues to undulate near 8 km reflecting tropospheric temperatures. In the stratosphere temperature change did not respond as well to troposheric changes as during December and January but rather a general cooling trend continues through the month. 18 ice crystal replica observed. Classification by microscope shows simple plates, columns and complicated combination of the two were predominant. Some bullets and graupels observed. Plates and columns observed at temperature from minus 8 to minus 40 Degress F. Size decreases with temperature. It is estimated simple plates taken at minus 40 Degrees F. measured .15mm.

Hallett Station

SitRep Nr. 15, March 4,1958 Aurora: Dome removed and all sky camera modified to operate in open. Patrol spectograph repaired and checked. The program is ready to commence in March. No aurora has been seen to date. Ionosphere: Damage from severe power surge lost half the days records on February 12. Noticable increase in F regio spread. Complete absorbtion from 1345z/10 to 2100z/11. Geomagnetism: sudden commencement 0126z/11, major percentage stopped 0800z/12. Seismology: three earthquakes reported out of the total of ten, phases not well recorded on remainder. Vertical long period seismograph still not set apparently due to temperature sensitivity. Work begun on repositioning instrument in pit on concrete foundation. Meteorology: Observational program progressing satisfactorily. Average temperature minus 2.0 Degrees C. Average wind SW 7.5 kts. Ground equipment failure obviated four flights, high eastern horizon interrupted three flights, only one completely. Average height 452 in flight 21570 meters.

Wilkes Station

IGY Nr. 252, March 3, 1958 Ionosphere: Modification to C-4 recorder still in progress. Recent records show improvement in the developing process. Scaling conventions prior to 28 January not consistant with current conventions. Plans for an attempt to study ionospheric heights and temperatures in progress outlined in a talk by Dean Denison. This requires simultaneous photos of the Aurora from Wilkes Station and S-2. At S-2 only pictures of Aurora and background stars will be taken. At W Wilkes Station simultaneous similar pictures as well as spectographic plates will be taken. This work is being done by Dean Denison and William Allison. Cosmic Rays: Equipment working satisfactorily. Input to scaling circuitry required modification. Installation of new equipment to measure particles passing through only first top two trays of meson telescope installed and data being taken. Old coincidence chassis removed and new chassis installed using new rings in circuitry for initial pulse forming stages. New circuitry shows great improvement over old pulse height discrimination. Cosmic ray work being done by William Alliaon and Dene Denison. Seismology: Three component seismometers and galvanometers mounted 26 February on single concrete piers set in bedrock. This firm base plus temperature control reduced drift. Geomagnetism: K scaling begun. Operation normal. On 11 February 15.91 degree change in declination occured during a severe magnetic storm having K sum 46 and AK 99. Roof of variation building was repaired. Less than 1% recording time lost during the month. Aurora: Since February 17 beginning of regular aurora observations three have been three relatively clear nights. On these nights clouds on horizon as high as N3. Aurora seen on 17 and 28 February and none on the 24th. Glaciology: Routine observations have continued. At the Ice Cap Station the slowly contracting deep tunnel was measured. In the S-1 area fresh ablation stakes were inserted to replace others affected by melting. Cronk continues to subtend the route of the gravity traverse. Robertson and Hollin used the good weather to continue work on solid and drift geology of the district and covered systematically the Clark Bailey Mitchell and Robinson ridge areas. During the last month the active layer of drift began to freeze. In March the empty chasim will change to snow and ice cover. Meteorology: 51 radiosonde flight completed. Average of these flights was 25,072 meters, with the highest 31,606 meters. Oceanography: Time gage in continuous operation from 8 to 22 February. Storm of 23 February made alterations necessary. Guage now again in operation with greatly improved wave damper. Time lapse camera studies of ice and current movements continue. Daily ice observations from Aurora tower commenced 18 February. Greatest concentration two tenths slush brash. General: Tunnels from Barracks to scientific building and recreation hall and from barracks to aero and communications buildings completed. All supplies moved into camp area cleaned of empty boxes and other combustible matterial. New snow gives wintry appearance to camp area. New drift patterns already apparent. One pup died but other dogs in good shape. Ommundsen having hard time finding seals but managing to keep dogs feed.

Byrd Station

Byrd Nr. 8, March 7, 1958 Geomagnetism: 19 disturbed days during month. Ordinates changed H 1830 gammas, Z 1580 gammas and D 40 minutes during period 0112z to 0710z . Aside from minor improvements observa-

tion. 48 earthquakes reported. Decreased heavy equipment operation resulted in marked improvement in seismic data. Meteorology: During month three of the rawinsonde flights reached heights above 30 kms. Traverse: Completed from 80 Deg 25 Min South 98 Deg 10 Min west to Byrd Station arriving February 20. The following observations were made; 7 seismic and pit studies, 42 rammsonde, 84 gravity and magnetic measurements. Four days lost due to weather and repair. None lost due to failure of resupply. Excellent support permitted completion planned itinerary despite late start. Long seismic refraction profile started at station. Glaciology: Total distance of traverse 1026 nautical miles. Pits dug and ten meter holes augered every thirty miles. Pit depth increased from 2 to 3 meters last half of traverse. General inspection of results indicates approximate yearly accumulation is 70 cms for last 5 years. Densities of the pit walls ranged from .300 to .500. Cores to ten meters varied from .450 to .600. Marked stratigraphy difference noted adjacent areas along trail. Temperature at 10 meters varied from minus 25.40 to minus 34.52 Degress Celcius. Coldest temperature near highest elevation and converse. Station Glaciology includes daily readings new thermohm area away from drifts. 120 accumulation stakes 120 km from station showed 4.3 cms. Surface topography study area has been located. 250 dowels being placed in a grid. Ionosphere: Operation is normal. Obvious change from usual high latitude summer time presentations observed as month terminated. Seasonal change resulted in fewer F-1 values because L condition and fewer regular E values. Radio Noise: Radio noise measurements obtained on all but two frequencies. Whistler: Whistler equipment being installed. Aurora: Spectograph electronics removed from spectograph and mounted in rack for easier accessibility. New mount consisting of turntable and verticle track constructed for spectograph. Unit in full operation. Station improvements: Tractor Train personnel constructed large undercover storage area and part of a new passageway between buildings. Badly needed recreation Building constructed. Large fuel tank a safe distance from the station now in use greatly increases time between refuelling. Many improvements in the living quarters in Building 14. Such station improvements excellent for moral and station operating smoothly.

Ellsworth Station

IGY Nr. 23, March 2, 1958 Ionosphere: Especially overworked during month with ASCK scaling. Reed busy with construction of Cosmic Ray station. In spite of overload, Semprebon has twice assisted in trouble shooting and repair of siesmic equipment. Aurora: Required standard operation of all sky camera clocks accomplished. Repaired 24 hour numeral clock transformer from 2400 to 0001. Installed intercom system set from scientific building tp tower. Two voice powered speakers will allow coordination of aurora and ionospheric program, Buzzer using time accurate output of ionosonde installed in tower will sound at 14,29, 44 and 59 minutes past the hour. Will serve as time mark and signal for visual observations. Times of 9 December night calculated and skedule for operation of automatic equipment set up. Photometric observations of sunset started. Because of overcast anly two records made, but will continue during March. Magnetometer operation routine. Six days records lost due to burnout of source light. Great storm of February 1 and 12 showed up very well. Meterrology: Most of month spemt on equip-

ment maintanence and snow field improvement. A new box platform for the radiometer was build which permits inside storage during bad weather. Replaced thermohms at 6 meters above and below the surface. Snow stake measurements begun in field. Improved pyrheliometer mount and screen. Calibration of records and radiation instruments started. Spare pyrheliometer does not function properly..Raob program still suffers from the condition of the GMD 1-A equipment. Constant servicing is necessary. Inside of TMQ receiver was filthy, with accumulation of dirt and lint which was shorting out electric points. Improper operation of time print mechanism caused loss of several winds aloft records. Four raobs lost due to high winds. Side door must be used because inflation shelter on windward side of base. Balloon and instrument smashed against building as soon as it leaves stand. Hydrogen generator reconditioned and filter chamber aided successfully in keeping water out of balloon during inflation. Heighest balloon flight 31,573 meters on February 15. Snow sampler being used by traverse party. Traverse: Completed one pit and seismic station from midpoint. Ionosphere: Antenna modifications completed. Scaling up to February 3. It is expected to be up to date on March 31. Cosmic Rays: Operation routine. All clocks now operate on voltage regulator and freguency standard from Aurora Tower.

IGY News

IGY News MSG Nr. 8, Fenruary 21, 1958 Antarctic Notes: A report of the House Committee on Interstate and Foreign Commerce covering an Antarctic visit of Committee members recommended continuance of Geophysical work in Antarctica beyond the duration of the IGY. The report states:

"We are fully conscious of the fact that a long range program cannot be worked out in a short time. We are equally conscious of the fact however that some program will eventually be evolved. No gap must occur however in our Antarctic activities.

We recommend that it straight away be decided that our activities in the Antarctic will continue for another year, that the National Science Foundation prepare a budget for the additional funds involved in enabling it to continue to act as fiscal agent for the scientific studies, and that the National Security Council authorize abd direct the Defense Department to furnish logistic support."

The report also paid tribute to work of scientific and military support personnel.

The following wintering over personnel arrived from Ellsworth Station in the US by air from Buenos Aires: Augenbaugh, Behrendt, Brown, Fierle, Malville, Neuburg, Ronne, Skidmore, Thiel, Walker.

Arctic Notes: Station A reported greatest ocean depth observed during winter drift, 10,660 feet. The ice floe thickened 13 cms during January by accretion from the bottom. On February 6 the USSR drifting Stations were positioned at: Nr. 6-79 30'N, 162 30'E; Nr. 7-06 00'N, 158 00'W.

Satellite: On February 1, 1958 the follwwing was received from the US IGY Committee: As part of the USNC-IGY satellite program an instrumented satellite was placed in orbit on this date at a point approximately 25.84 degrees North latitude and 73.61 Degrees West Longitude. Launching was from Cape Canaveral, Florida. First estimate places orbit inclination 34.1 degrees apogee approximately 2000 statute miles and a period of about 110 minutes. The satellite weighs about 30 lbs including empty rocket casing. It is cylindrical, about 6 inches in diameter, 80 inches in length and contains two radio transmitters, one transmitting on 108.03 MC, ampli-

tude modulated with telemetry data. The power leval of this transmitter is 50 milliwatts and expected battery life is about two weeks. The second transmits on 108.00 MC, phase modulated with telemetry data, power level 10 milliwatts, with expected battery life of about two months. Scientific experiments carried include cosmic rays observations, meteoric impact, and temperature measurements.

On February 21 the following information about the satellite was received: 108.03 MC transmission1958 Alfa ceased 11 February 11.108.00 MC signal continues for both tracting and telemetry. Preliminary data indicates temperature maintained between 40 Deg and 90 Deg F. Temperature regulation achieved by exterior strips aluminum oxide designed to control radiation properties of surface.

National Research Laboritories report that analysis of minitrack data Alfa 2 provided new evidence of the density of the atmosphere from 232 km to 500 km altitude. At 400 km atmosphere was found to be 40 times as dense as previously accepted.

The USSR on February 3 sent to CSAGI a preliminary report on 1957 A and B consolidating previously known information on satellites and experiments.

Through December 31, 1957, 151 moonwatch teams reported 1506 useable observations of A-57 and B-57. 91 US stations amassed 994 sightings; 4 Australian stations had 91 observations; 1 Chilean Station reported 7 sightings; 51 stations in Japan had 413 sightings.

Rockets: Analysis data from the 1957 rocket experiments indicate 300 mph winds 60 miles over Fort Churchill. Second ranging technique used measuring arrival times sound exploding grenades ejected from Aerobee.

Oceanography: Engine trouble required the Woods Hole Oceanographic vessel Atlantis to abandon projected eight month cruise and return new York under sail from Bermuda for repair. Ship then expected to sail to the Indian Ocean via Mediterreanean. Vessel Crawford may take over South Atlantic observations.

Meteorological Report Wash DC Area: Snow accumulation 18 hour period 17 to 22 inches, drifts to 20 feet, temperature range approximately zero to 18 Deg. F for two week period. Winds from 25 to 30 mph, peak gusts to 50 mph. Many shallow pits dug to extricate vehicles. Result to area - chaos.

SITREPS for March 1958

Little America

No. 14, April 3, 1958 Aurora: The second patrol spectograph has been mounted in a three foot dome in the tower. Infra red film will be used in this equipment. Films from both spectographs and the all sky camera of the first aurora on 29/30 March show that the equipment is operating satisfacorily. Observations of Meteor Radar are greatly hindered by station communications equipment. All attempts to shield the antenna lead have not lowered the noise enough to observe more than the largest meteors and aurora echoes. Noise on the line and and a noise grid resistor have made observations of the sodium D lines difficult. New Applegate high voltage supply rectifier burned out in spite of fuze in primary transformer because current limiting resistor shown in circuit diagram for 123 A supply was left out. High voltage supply from scanning spectrometer is being used for the second spectograph. The replacement K-100 camera was not received in last shipment this season. Geomagnetism: Operation Routine. Ionosphere: Operation normal with no data from C-4 for a total of 46 hours during month. Most of the trouble is with ART scope blanking and some operator error . There were over 120 hours blackout during the month. During the last half of the month absorption has been high during daylight hours with initial F minimums of 3 mc. Meteorology: Guarcello joined staff early in March and is now fully integrated into observations. All personnel participating in the general station activities inaugurated this month, including work on weekly station newspaper and attendance at regular classes in diverse subjects. Chemicals for hydrogen manufacture moved from outdoors caches to the inflation shelter. With onset of darkness storeroom and outside lights were connected and ceiling light was put in operation. The highest radiosonde run occurred 0000Z on March 9 reaching height of 31,920 meters where pressure was 9 MB and the temperature minus 42 Deg. Celcius. Special radiosonde observations were taken at 1800Z on March 20 and at 0600Z on March 21. New CO2 line installed from 400 feet northeast of camp to the recorder. Weather Central: The new men are integrated into the routine program. The data supply is good except for five days of radio blackout near the end of the month. Research activities increased to average 25 percent per man. Current investigation include jetstreams, central Antarctic circulation, pacific sector circulation, objective forecasts for Ross Sea Area, continuation of mean circulation study of Alvarez and Rastorguev. Plans have been made to study Simpsons pressure surges and Antarctic frontal and tropopause configurations with space cross sections. Men participating in most camp activities with Russian and Spanish being taught by foreign representatives. Glaciology: Finished the survey of 11 of the 14 stakes of the triangulation array. Reverse refraction profiles shot 5 to9 Km on the barrier in the vicinity of the station. Tentative calculations show 6.3 km per second layer 1400 meters below ocean floor. Short distances will be filled in from refractions on Bay ice. Gravity: Vertical shelf oscillations changed from 15 seconds to 40 second period during month. Traverse Operation: Supplemental traverse operation underway to mile 160 on Byrd Trail. Party left Little America 24 March and will return about 8 April. Tentative altimetry calculations for Main Ross Ice Shelf Traverse show elevations from 28 meters near barrier to 117 meters near Liv Glacier with average of 65 meters for 40 stations

Byrd Station

Byrd Station Nr. 7 April 14, 1958: Aurora: Aurora displays observed 28 through 31 March. Spectrograph operative but solid overcast delayed its use till the 25th. Unforeseeable minor equipment difficulties prevented operation all sky camera till beginning April. Severe interference to Ionosphere and communications caused by 60 cycle generator eliminated by shielding and filtering. Double domes over both instruments frost free while remaining single dome impossible to defrost. Geomagnetic meridian surveyed. Traverse Seismology: Refraction profile in direction of norm to previous profile completed. Exact sub-ice refracted arrivals at 18,20,22 km from 250 lbs charges in 10 meter hole. Reflection survey area 4 by 9 Km completed to compare ice surface and bottom topography. Glaciology: 5 shallow pits and auger holes 10 meters deep completed in seismic reflection area. Preliminary inspection indicates 40 cm to 60 cm yearly layers on pit walls. Surface study area completed the 14th with 250 doles intervals of 2 1/2, 5, 10, meter spacing. The total surface covered 100 meters by 100 meters. Fourth area covered 5 meter intervals, thirtheenth area covered 2 1/2 meter interval. Accummulation from 120 poles 3.9 cm, water equivalent 1.28 cm. Thermohms read twice daily. Geomagnetism: Primarily a very disturbed month, which was well recorded. The record loss was very low and the outside work completed. Final interior improvements in working stage. Some pier shifting still continues as well as temperature difficulties. More values required before giving H and Z intensities. Declination apparently 67 Deg 25 min east . Seismology: Quality and information poor. 37 discernable quakes reported. The majority of disturbances were local action. Communication interference continue to bother horizontals. Lack of ground for filtering is problem. End of month records improved and should continue. Meteorology: The construction of the tunnel to the inflation shelter was completed. A snow melter was installed in the inflation shed. A new stand for the pyreheliometer was made. The Azar recorder for radiometer put into rack, while the placing of the radiometer into operation awaits the welding of a stand. Every effort is being made to have the radiation equipment operating by early April using potentiometer for temperature readings in place of the two point recorder. A third set of guy wires to the top of the aerovane mast were installed. A store room for the met supplies has been constructed. Remodling has begun on the met section. A switch was made made to night flight balloons for all runs in the latter part of the month. Runs continue to have good heights with average of 64 raobs 23,835 meters. Fairly large number of night balloons have holes apparently resulting from improper molding. The highest raob of month was made during the World Day and recorded a pressure of 9 mb. Ionosphere: Normal operation continues. Less than 1 % data lost this month and that due to tube failure. There was a marked decrease of recordable F1 and E values. Highest medium values 8.4 mc at 1100 abd 1200, lowest 4.6 mc at 0100. There was a pronounced increase in FOF2 values during the last four days of the month. Large solar disturbance reported about his time. Several ionospheric disturbances apparent between the 25th and 27th of month. Local Antarctic communications suffered many days during early morning hours when absorption high. Ionosphere scaling table and data moved into adjacent small room. Radio Noise: The radio noise measurements continue with some lose for minor equipment failure. The Whistler project antenna and equipment are near completion.

South Pole Station

IGY Nr. 300 Celestial observations begun with stars obscurred on 25 March. Aurora: Patrol spectograph in operation since March 22, recording twilight phenomena. Spectra have contained mainly solar continuum and absorption lines. Double dome installed in January frosted inner surface at temperatures below - 85 Deg F, and inner dome was removed. Seismology: Station operation was normal. 173 disturbances reported in March. 32 confirmed quakes in February. Geomagnetism: Records were lost from February 26 to March 4 because variometers were clamped. Declination component was missing until March 26 because variograph was not properly aligned. Ionosphere: Operation was normal except towards the end of the month. Rapid fluctuation in the line voltage caused uneven ionograms about 50 % of the time making virtual height measurements difficult. Maximum median for two for the month was 6.8 mc. March 12 F-min suddenly increased from 1,6 mc at 0200 to 3.4 mc at 0300 and has remained high with few exceptions. Continuous records were taken for two hours daily until March 11, after which night time conditions appeared to have been reached. Micrometeorology: 98 hourly wind profiles were run during the month measuring on 27 separate days. Excellent correlation obtained between roughness parameter and changing surface features. Low winds characterized most of the month, with maximun Hourly 8 meter speed of 10.7 m/s on the 13th. All profiles logarithmic to 1 or 2 meters, but only 25 percent logarithmic to 8 meters. Lowest set of cups now 5 cm above snow surface. Anemometer cup heights adjusted for winter season. Temperature gradients taken through month. First 10 days had many inversions 10 to 20 Deg F. Rest of period had smaller inversions averaging around 4 Deg. F. Shielded Nr. 40 guage thermocouples replaced with protected Nr. 36 guage thermocouples for period with no short wave radiation. Twilight phenomena such as earth shaddow, anti-twilight arc and purple light watched carefully and photographed. Glaciology: Monthly accumulation 2.5 cm. Four compaction sets installed. Addition compaction observation set being installed in deep snow mine with angular integrator (covers six meter area). Lights and winch ready in snow mine, Digging will continue vertically from present depth of twenty five meters. Filtering scheduled to start middle of month. General: Cursory observation indicates that the ferguson tractor is not a reliable prime mover at the South Pole as rubber doricters for track pads are brittle at temperatures below minus 60 Deg F and break. Inclosed garbage pit and tunnel 500 feet from station now in use. Station water supply now maintained by surface snow mining. Lack of new generator brushes now causes fluctuating voltage difficulties in proper and accurate electronics records.

Hallett Station

IGY Nr. 81 Sitrep Nr. 16 April 1958 Aurora: Auroras seen on following days in March: 16,20,24,26,29; March 7 was clear but no Aurora; the rest of the month was cloudy. Tuning fork controlled 60 cps supply built and fitted to the all sky camera clock. The patrol spectrograph minuite counter operating from seismograph clock impulses. Automatic change-over relays and battery standby power installed for both sets of clocks. Ionosphere Low absoption and considerable sporadic echo activity beginning of the month. Little sporadic echo noted end of month. Absorption rose suddenly 11/0230Z and is still increasing. There were two periods of total blackout; on 14/2100Z to 15/1200Z and 25/1550Z to 27/0800Z. No equipment failure for the month.

Geomagnetism. A sudden commencement on 14/1211Z and 25/1540Z was recorded. The latter correlates well with the second ionospheric blackout. Seismology: Two earthquakes were reported this month. High amplitude microseisms registered on long period recorder render traces unusable for period of several days. All recorders now operating on concrete pier anchored to the permafrost. The hut has been sunk in a pit and earthed up to the roof level giving more stable temperature control and freedom from wind effects. Vertical seismometer now operating satisfactorily. Meteorology: All programmed operations now on a routine basis. Wind tower located midway thermoscreen and radiation instruments. Two meter wind velocities are being registered on separate esterline Angus recorders. The average monthly temperature was 7.9 Deg C, average wind from SSW 10.0 Knots, average height of Raobs was16,980 meters with the high eastern horizon beginning to effect flights.

Wilkes Station

IGY Nr. 274, Wilkes Ststion March Sitrep Ionosphere: C-4 inoperative most of the month because of modifications and various troubles. Cosmic Rays: Equipment working satisfactorily. Station Seismology: The new power line from the science building to the recorder gives uniform cycle per second for better spacing of minute marks. Microseisms have been above normal10, 11, 14, 15, 24, 30, 31 of March. Strong surface waves were recorded after the earthquake of 6 March in the Fiji Islands. The result surprising since focus was reported 50 Km deep in msgs of 261,615. Geomagnetism: Operation has been normal except for programming. K scaling shows maximum activity during t=2 period and minute during T=6 period for months of February and March. Aurora: Approximately 50% of the nights have been overcast. Many aurora recorded on the remaining nights. March 28 produced display of brightness 1 lasting 1 hour in region N2 to Zenith consisting of rays and rayed arcs. Display was proceeded by faint corona and numerous faint rayed forms. On March 9 there was display in which A type B in N1 an d N2 appeared. Repair work done on spectrograph programmer and all sky camera clock. Spectograph G minute counter connected to ionospheric clock. One roll of all sky camera film lost because of developing 20 minutes as per instructions. Development should be for 35 minutes only in D-76 for 100 foot roll tri-X. Height program established at Site 2 and in progress. Dean Denison spent week at Site 2, his return being delayed by bad weather. Glaciology: Early in month Hollin, Robertson, Cronk, Ommundsen, visited Vandeford Glacier for routine measurement purposes. Hollin and Robertson continued across icecap to Browning Island working there 3 days. Cronk and Robertson returned later to Browning Island to core bottom sediment from melt water lakes to obtain lake water samples for salinity determination. Robertson carried out geological studies on Baily Island. Hollin and Ommundsen have been at Site 2 for 2 weeks engaged in building and repair projects. Routine observations and some fabric work on last years cores accomplished. Ommundsen took the dogs and weasel sled to Site 2 for training on better snow surfaces. Cronk and Robertson have been carrying out routine observations near base camp and Site 1. Robertson left for Site 2 on March 31 to replace Hollin. Meteorology: (Temperatures in Degrees Celcius) Average montly Temperature -4.9, highest temperature 2.8 on 5th, lowest - 12.2 on 12th. 58 Raobs completed with an average height of 24,209 meters. Zimmerman spent a week at Site 2 installing recording anemometer. Oceanography: Tide guage in continuous operation 10 through 31 March. Maximum tidal difference 5 feet. Time lapse camera in operation only during first half of month because of lack of ice during the remainder

of the month. Station and marker have been established for theodolite observations of shelf ice or calving on Cape Folger. Survey Work: Permanent iron pipe in drilled hole in rock established in following locations; Clark Island, Bailey Island, Mitchell Island. Halfmile base line on level ice area netween rocks measured on Clark Island. General: A high gain corner reflection anteena has been constructed on a platform located on a rock ledge West of the Station for Satellite tracking. Station reefers have been enclosed. The tunnel from the Galley Storage Jamesway to the Galley has been completed. A 12 by 12 foot enlargment on the plumbing and carpenter shop has been constructed. A chapel of similar size is now enclosed and will be used for the first time Easter Sunday. The Chapel is located at the corner of the science building and the new tunnel.

Ellsworth Station

IGY Nr. 80, March Sitrep After extensive reconnaissance, supply train consisting of two D-8 tractors each pulling five 10 ton sleds of mogas, Avgas and supplies and 1 radio equipped snocat departed the station 21 March. Marty has now passed through the heavily crevassed area south east of the station. Train will be left about 90 miles south south east of the station ready to move in the Spring to set up an inland base at a point to be decided when IGY traverse route finally set up. Success of the train assures vehicles of route into interior and important saving of critical Avgas in hauling fuel. Scientific program in normal operation. Only meteorological with Raob problems causing concern. Must go along with presenr situation due to impossibility of moving inflation shelter, and the lack of material for new one on side of camp. Fine relations with the Argentine Station of General Belgrano continue. Their ionospheric equipment out of order. This station will attempt to help rectify the problem. Aurora: Observation were made on seven nights, commencing three March. All Sky camera is in position in dome and geomagnetic meridian arc lights are set for 1/2 Deg of Latitude at 100 Km height. Sealed gear in 24 hour numerical clock jammed, and replaced. The unit has since been cleaned and can be used as s pare but is not dependible. Spectrograph 1000 volt power supply failed, replaced by new Applegate mmounted externally. Belgrano will be able to use all sky camera received for height determinations . Cosmic Rays: Neutron counter operating well . Meson telescope very unsatisfactory as outer coating on 80% of the GMM tubes has flaked off. Currently attempting to rectify trouble with new paint. Traverse: Seismic studies and Glaciological pits were made at the following points; Alfa - 80-03S 54-32 W; Baker 80-11S 56-37W; Charlie (Pit only) 80-34S 58-52W; Delta 80-57S 61-16 W. Seismic reflection received only at station Delta and Echo. Rammsonde test conducted at each pit and between station Alfa and Baker and Delta and Echo. New gyro compass unreliable in sno-cat, as it drifted as much as 40 Deg in six miles. Glaciology: Because of excessive drifts around old snow stakes new 1/4 in dowels set out to measure accummulation and ablation. Work begun in deep pit. Ionosphere Operation is normal.

General IGY News

IGY News Message Number 9 - The South Pole receives more sun than any other place on earth during December, but most of its energy is reflected by the ice cover. The study of this condition was the special program carried out by Dr. H. Hoinkes who wintered over last year at Little America and who spent one month at the South Pole Station in December and January. It ap-

pears that about 89 % of the solar energy received by the Antarctic is lost through such reflection. The absorption of radiant heat is slow because of the fine grain of the top snow layer and the hardness of this surface layer. In 3664 temperature observations taken at Little America by Dr. Hoinkes during a five month period last year it was found that under the most common wind conditions, southeasterlies of 19 knts average wind speed, temperature differences between the surface of the snow and 50 feet above the surface was only one to three degrees. But under clear conditions and no wind the extreme long wave radiation from the earth to the sky caused temperture inversions of 25 Deg in 6 feet. With the return of cloud cover, blocking further loss of heat and emitting heat itself, rapid warming of the surface takes place even in winter.

IGY News Message Number 19 - The Photographs of penguin tracks taken by the Byrd Station Traverse at 77-32 S, 98-55 W have been identified as tracks of either the Adelie or Chinstrap Penguin. The latter is known to breed in small numbers on Peter I Island in the Bellinghusen Sea. The observation of the tracks indicates that Penguins may be breeding along the Marie Byrd Land Coast, a fact for which there is no other substantiation. It was reported that on March 10 an overheated stove destroyed the Chilean Base at Dorio Riso Patron near O'Higgins Base. There were no causualties and most of the scientific equipment was removed safely. In the discipline of Aurora it was reported that the Red Aurora of February 10/11 was exceptional in many ways. Balloon observations above Minneapolis, Minn., at the 10 MB level showed large xray bursts at 0630 and 0930 UT on Feb. 11. Magnetic excursions of 700 Gamma were observed at the Fredricksburg Magnetic Observatory. Coincident with these peaks strong absorption of cosmic radio noise was reported at Boulder Colo. During this same storm extremely high voltages, reaching peak value of 2400 volts in the trans-Atlantic telephone cable. A marked increase in cosmic ray intensity on Feb. 11 was measured by the USNC/IGY satellite 1958 Alfa. Visual observers reported the red Aurora as far South as Cuba